DoD Enterprise Architecture Reference Model Communication Campaign Strategy

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INTRODUCTION

This ***Department of Defense Enterprise Architecture Reference Model (DoD EA RM) Communication Campaign Strategy***[1] identifies the approach that DoD will take to (1) conceptually align the DoD EA and the Federal EA (FEA), (2) develop DoD EA RMs, and (3) promulgate a DoD/FEA RM Alignment and Maintenance Plan (being developed by the DoD Chief Information Officer and the Architecture & Interoperability (A&I) Directorate-sponsored DoD EA Congruence Community of Practice (DoD EAC CoP).

The FEA is designed to represent the general lines of business and agency-specific mission activities/supporting resources of the Executive Branch of the Federal Government…as a whole and within each of the agencies, including DoD.[2] Information technology (IT) resources are the current focus of the FEA, though other types of resources will be included in coming years. Various EA documentation frameworks and implementation methods are authorized for use in the Federal Government, including the DOD Architecture Framework (DODAF), the Federal EA Framework (FEAF), the Treasury EA Framework (TEAF), and the Zachman EA Framework. [3]

The FEA can be viewed as a meta-architecture that uses a number of "Reference Models" (RMs) to establish the scope of the Federal EA, standards for the reporting of important architecture information, and links to other agency governance processes (e.g., strategic planning, capital planning, program management, performance reporting, security, and human capital planning).

The DODAF can be viewed as a documentation framework that uses standardized information on operations, and systems, to standardize the development of tightly coupled systems architectures that is useful for developing enterprise architectures in an a platform centric, point-to-point computing and communications infrastructure[4]. Currently the DoDAF is being restructured to focus on a data centric approach for standardized architecture data. DODAF information supports the accomplishment of key DoD strategies and planning objectives, including Joint Vision (JV) 2020 and the Revolution in Military Affairs (RMA) but will evolve to better support a net-centric enterprise information environment that is represented by DoD's

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[1] The DoD EA Campaign Plan and associated document package contains elements necessary to achieve buy-in from DoD Executives. It articulates the interdependencies between and among the producers and consumers of enterprise information. It includes a plan to show how enterprise architecture information and the context that the DoD Enterprise Architecture Reference Models (RMs) bring to understanding those complex interdependencies. The package also discusses the use of DoD EA RMs by the Department (e.g., portfolio management) to support DoD executive decision-making processes and the government decision processes at large. The campaign package will clearly articulate the value that the DoD EA RMs brings to the department and the government. This campaign package uses various media to get the points across such as professional multimedia presentations, white papers, briefings and discussion forums, articles in the trade press, executive round tables, panels at conferences, key note speakers at conferences, and articles published in professional journals.

[2] OMB Circular A-11 (July 2004).

[3] The specification of "authorized" EA approaches and frameworks is provided in OMB Circular A-11 (July 2004), and OMB Circular A-130 (November 2001). Amplifying information on these approaches can be found in DOD and Treasury Department guidance (for the DODAF and TEAF), "A Practical Guide to Federal Enterprise Architecture (for the FEAF), *www.zifa.com* (for the Zachman EA Framework), and *www.feapmo.gov* (for the FEA).

[4] *Bass and Mabry, Enterprise Architecture Reference Models: A Shared Vision for Service-Oriented Architectures, Current Version, http://www.enterprise-architecture.info/Images/Defence%20C4ISR/enterprise_architecture_reference_models_v0_8.pdf*

target Enterprise Information Technology Architecture, GIG Version 2.0 and the Net-centric Operations and Warfare Transition Plan to the target architecture.

This ***DoD EA RM Communication Strategy*** provides an overview of the approach and methods necessary to demonstrate the value that DoD EA RMs bring to the enterprise-level decision processes of the Department… initially to the Enterprise Resource Allocation portion of the DoD Capital Planning and Investment Control (CPIC) process and to other parts of the CPIC process thereafter.

BACKGROUND

DoD in the Information Age

DoD is a pioneer and continuing leader in IT planning methods, including EA. From being a participant in the invention of computers in the 1950s to the inception of large-scale computing in the 1960s, DoD has been at the forefront of developing approaches to best leverage IT resources and capabilities to accomplish the warfighting mission. As mainframe-centric computing evolved in the 1980s to more scalable client-server architectures, DoD developed the Computer Information Management (CIM) initiative to reorganize and streamline the use of computing resources. Reflecting the globalization and consolidation of voice, data, and video technologies, the CIM initiative was followed in the mid 1990s by the first architecture-based approach to coordinate IT-related planning for Command. Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) requirements. This architecture approach was further refined in 2002 to incorporate best practices from government and business, as well as to place this planning in the context of DoD's Global Information Grid (GIG), which encompasses all active land, sea, air and space-based IT resources. The current enterprise-wide architecture planning approach is called the DoD Architecture Framework (DODAF) and is the only approved method for documenting existing and envisioned IT systems throughout the Department.

The DoD Architecture Framework

The DoD Architecture Framework (DODAF) uses various documentation "views" (diagrams, documents, data, specifications, work products and other artifacts) to describe a new or existing IT system within the meta-architecture of DoD's Global Information Grid. The GIG's architectural standards for warfighter support and interoperability dictate the component IT system solutions that are developed and documented using the DODAF. This DODAF-based documentation is further standardized through the use of a required and optional group of Operational Views (OVs), System Views (SVs), Technical Views (TVs), and All Views (AVs) (**Figure 1**).
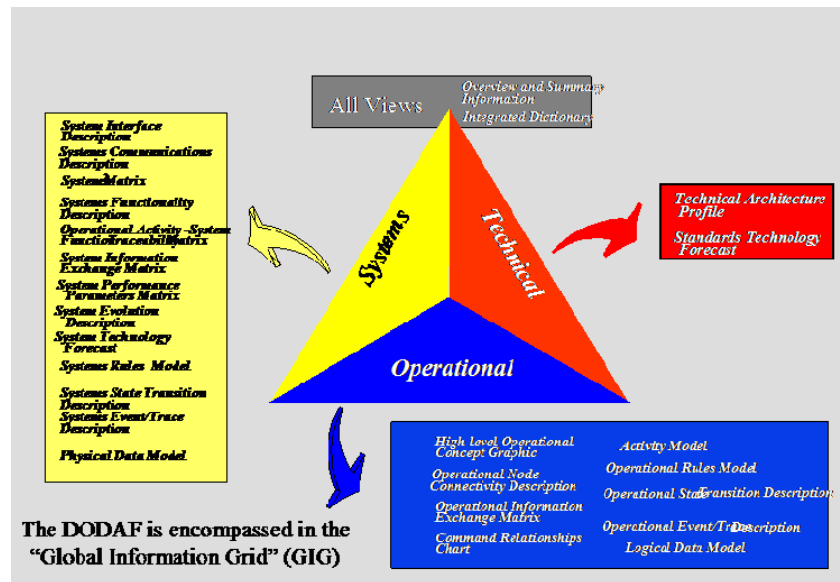
Figure 1. The DoD Architecture Framework (DODAF)

The Global Information Grid[5]

The Global Information Grid Architecture Version 2.0 (**Figure 2**) will give DoD and industry program managers clear acquisition guidance for the next five to 10 years. From GIG
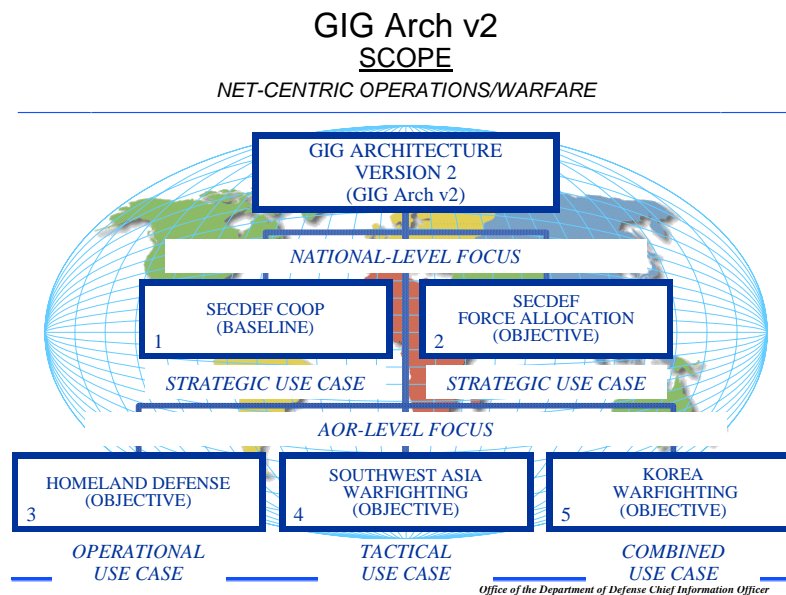

Figure 2. GIG Architecture Version 2.0

Architecture comes the Net-Centric Reference Model (NCOW RM) (**Figure 3**). According to the program manager for the NCOW RM … it explains net-centricity for DoD and industry program managers. It also explains the concepts of net-centricity for their architects and those who develop their capabilities. In addition services and agencies have their own architectures and the RM establishes a DoD-wide framework for realizing
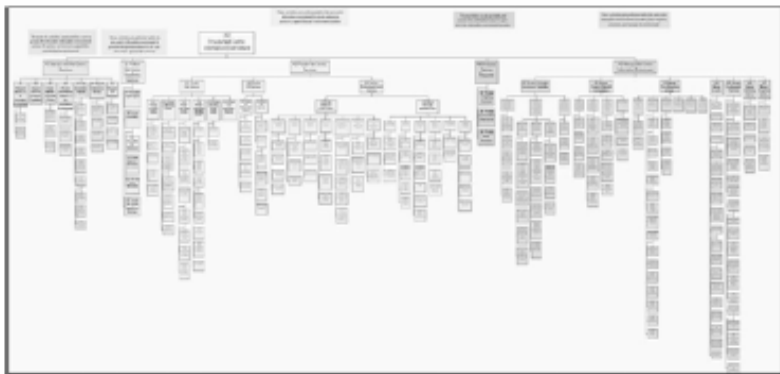

Figure 3. NCOW RM Node Tree V.9

net-centricity. In other words, the NCOW RM becomes the target that all DoD Services and agencies will use as for transition planning in order to create the IT EA for the Department. According to the program manager for example, each Service defines a local-area network differently; with the NCOW RM, he said. "We will provide a simple definition of a LAN. Again, according to the program manager "We want to post information, whether processed or not. "[Net-centricity] recognizes a fully networked force. You search, you pull." All in DoD believe the value of operating a net-centric environment is that combat power is multiplied by, and according to the GIG Architecture Version 2.0 program manager, "it facilitates faster command, a faster warfighting tempo, greater firepower and increased survivability".

Federal Government Law/Guidance and Approaches to EA
The U.S. Constitution divides the Federal Government into three autonomous branches: Executive, Legislative, and Judicial. DoD falls within the Executive Branch, which encompasses the Presidency and all of the departments, agencies, commissions, and other organizations that report to the President in accordance with the mandates of laws that are passed by the Legislative Branch and interpreted by the Judicial Branch. The Office of Management and Budget (OMB) is the organization within the Office of the President that is responsible for identifying standardized approaches for planning and decision-making throughout the Executive Branch. OMB does this by issuing annual or periodic guidance in the form of a "Circular." The guidance contained in OMB Circulars are based on Federal laws passed by Congress and/or Presidential Executive Orders, and reflect the President's desired approach to standardized planning and governance throughout the Executive Branch.

Prior to 1996, the primary Federal law that addressed the development and operation of IT resources was the Paperwork Reduction Act (PRA). In 1996, the PRA was amended and extended by the Clinger Cohen Act (CCA), which mandated new governance processes including enterprise architecture and capital planning, and which gave each agency in the Executive Branch the authority to develop and executive its own IT investment portfolio within the context of an enterprise architecture (prior to this the General Services Administration approved all IT project proposals and milestone reviews). The Defense Authorization Act of 1998 clarified that the mandates of the CCA applied to the whole of DoD, including all Services,

Joint Agencies, and other organizations reporting to the Office of the Secretary of Defense (OSD). Further, OSD was identified as being responsible for the submission of DoD-wide annual IT budget, program status, and capital planning information that is called for in OMB Circulars A-11 and A-130. The e-Government Act of 2002 solidifies the role of OMB and the subordinate Federal CIO Council in establishing and refining Federal approaches to IT governance, including enterprise architecture and capital planning.

OMB Circular A-130 (November 2001) entitled, "The Management of Information Technology Resources in the Federal Government," is a periodic guidance document that establishes an overall approach for agencies to use in establishing and conducting IT governance. OMB Circular A-11 (July 2004) entitled, "Federal Budgeting, Strategic Planning, Performance Planning, and Performance Reporting," is an annual guidance document that provides budget development and program reporting guidance that is updated each year, as well as guidance on the development of long-range agency strategic plans. The purpose of this OMB A-11 guidance is to standardize and harmonize the planning and management of agency resources, as well as the reporting of how these resources are performing in supporting mission accomplishment. OMB A-11 guidance also is used to emphasize collaboration among agencies and a new focus on using Executive Branch-wide "Line of Business" programs and solutions to meet agency requirements (e.g., e-Travel, Grants.gov, Business-Gateway, e-Payroll).

THE DOD EA RMS

The DoD EA RMs are modified versions of the FEA RMs, and serve to provide standards for the documentation and reporting of GIG architecture information throughout the Department. The DOD EA RMs also enhance the Department's alignment with architecture planning and reporting methods throughout the Federal sector, which improves collaboration and multi-agency mission execution (e.g., support for domestic emergency, first-responder, and homeland defense activities).

The GIG architecture is divided into four general mission areas: warfighter, business, intelligence, and enterprise information environment (EIE). **Figure 4** shows the relationship between the GIG, the DODAF, the DOD RMs, FEA RMs, and the OMB-required program reporting (via the Exhibit 300 template).
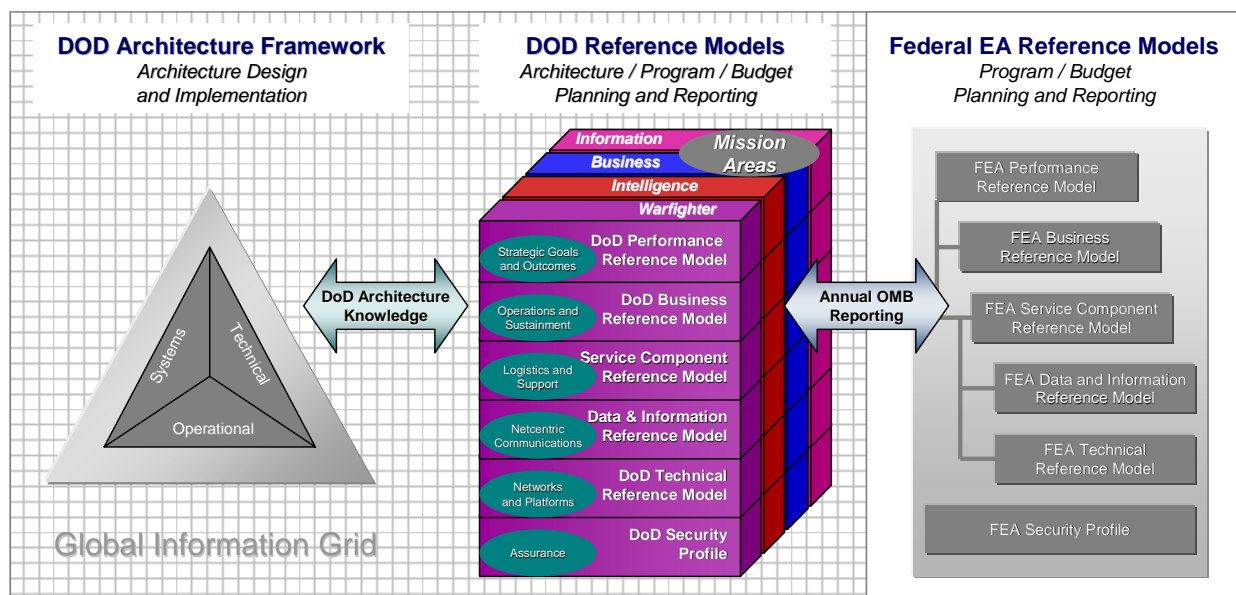

Figure 4. GIG Mission Areas and the DOD EA RMs

The DODRMs will provide the Department with standardized information on the GIG architecture from both a top-down and bottom-up perspective. Regardless of the GIG mission area or supporting IT system, the use of the DODAF and the five DOD RMs for documentation and reporting will promote common planning methods, modeling techniques, and metrics development and use.

The DOD RMs will also promote a specific and strong tie between architecture and investment planning throughout the Department. In that the IT Capital Planning and Investment Control (CPIC) process is the primary governance process for establishing and maintaining a DOD and Service investment portfolio that effectively prioritizes the use of limited budget resources. **Figure 5** shows the relationships between the architecture and capital planning activities, as well as how DOD RM information can be leveraged in these IT governance processes.
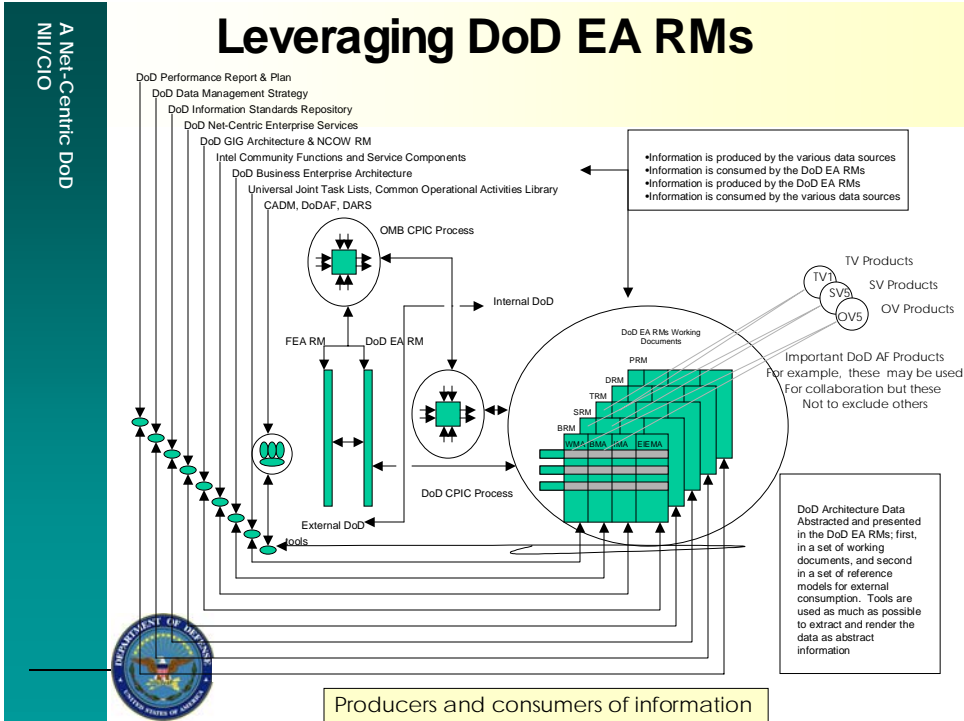
Figure 5. The Use of DOD EA RM Information to Support IT Capital Planning

BENEFITS OF THE DOD EA RMS

The DoD EA RMs provide vision into the DoD-wide architecture, giving each DoD organization a collection of new capabilities from which to choose from for defining and implementing their target enterprise architecture environments. DoD organizations will now be able to:

- Save time and money by leveraging reusable business processes, data, and IT-components in other DoD organizations and other Federal Agencies.
- Leverage DoD and FEA work products as a catalyst for DoD organization-specific enterprise architecture efforts.
- Ensure proposed investments are not duplicative with those of other DoD organizations and other Federal agencies – prior to developing business cases and submitting them to OMB.
- Suggest modifications to the DoD EA RMs to ensure future versions accurately portray the capabilities and service components of industry and government, including the role specific agencies play.
- Meet requirements for OMB Exhibit 300 budget submission by aligning to the FEA RMs.

The DoD EA RMs provide benefits to the Federal Government as a whole by providing other agencies with vision into the DoD-wide architecture, providing ideas and solutions for common requirements. The DoD EA RM alignment with the FEA RM provides the policy and budget organizations of DoD and OMB with a greatly enhanced cross-DoD and cross-Cabinet level agency analytical capability. Through the analysis of the DoD EA RM, as aligned with the FEA RM, DoD will be able to see opportunities for collaboration of processes, data, services, and technology across DoD Components. OMB will be able to see opportunities for collaboration of processes, data, services, and technology across Federal Agencies and Governments.

INTEGRATING WITH THE FEDERAL EA RMS [6]

Federal EA RM Development

Reflecting a change in Presidential Administrations, in mid-2001 OMB published the President's Management Agenda (PMA) to clearly articulate President George W. Bush's views on how to achieve a more citizen-focused and market-based approach to providing Federal Government services. Five PMA strategy areas were identified, one of which was "Expanding Electronic Government." The fact that e-Government solutions made the "top-5" list reflects the growing importance that IT has in enabling Federal Agencies to accomplish their missions. What was also unique about the PMA's e-Government strategy area was its emphasis on developing collaborative, multi-agency solutions for providing on-line Federal Government services. The emphasis prior to the PMA was on the development of early e-Government capabilities *within* each agency…. and while multi-agency collaboration was encouraged, it was not emphasized. As a result, the Executive Branch of Government had continued to be characterized by duplicative IT systems and services including dozens for financial management, human resources, grants administration, law enforcement, rulemaking, statistics, health care, and defense.

To achieve the PMA's goal of Expanding e-Government, OMB officials, led by Mark A. Foreman (the first person to hold the title of Administrator of E-Government and IT) sought ideas from all of the Federal Agencies in early 2002 for collaborative initiatives to improve on-line service delivery…. and they received hundreds of suggestions. From these suggestions, twenty three Executive Branch-wide e-Government initiatives were selected for implementation. This group of initiatives were called the "Quicksilver e-Gov Initiatives" and they covered many types of services that could be categorized as: government-to-citizen (G2C); government-to-business (G2B); and government-to-government (G2G) electronic services.

The process of reviewing and selecting the Quicksilver e-Government Initiative group also led OMB to realize that a new approach to enterprise architecture was needed in order to reflect a shift in focus to multi-agency collaboration and the reduction of duplicative services. To enable this shift in focus, OMB announced the establishment of the Federal Enterprise Architecture (FEA) program in mid-2002, with the goal of being "a business and performance-based framework to support cross-agency collaboration, transformation, and government-wide improvement…. it provides OMB and the Federal Agencies with a new way of describing, analyzing, and improving the Federal Government and its ability to serve the citizen." [7]

The FEA consists of five "Reference Models" and a "Security Profile" that are intended to promote "cross-agency analysis and the identification of duplicative investments, gaps, and opportunities for collaboration within and across Federal Agencies." [8] These five Reference Models are intended to work together to assist Federal Agencies in developing enterprise architecture approaches that are strategy and performance driven, and also to provide the first

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[6] This section's information is from An Introduction to Enterprise Architecture by Scott A. Bernard. Publisher; Authorhouse, Inc., Bloomington. IL. 2004. ISBN 1-4184-9808-4. All rights reserved.

[7] Federal Enterprise Architecture Program Management Office (FEAPMO) website. www.feapmo.gov

[8] Ibid

standardized formats for reporting enterprise architecture information to OMB from each Agency. This standardized enterprise architecture information is submitted annually to OMB as part of the Federal Budget submission process that is described in OMB Circular A-11. The Fiscal Year (FY) in the Federal Government runs from October 1st to the next September 30th.

The Federal Budget development process is how Agency EA and IT Programs get reviewed and funded, and the process works generally as follows. In order for the President to be able to submit a proposed Fiscal Year (FY) Federal Budget to Congress each January for the next Fiscal Year that begins in October, OMB must begin working on that FY Budget two years in advance, due to the complexity and amount of information needed from Agencies and the Administration. In an ideal-world example, inputs for the FY 2007 Federal Budget would be developed by Agencies in April-August 2005, submitted to OMB in September 2005, reviewed by OMB in October-November 2005, presented to Congress by the President in January 2006, debated in Congress in February-June 2006, and approved (as amended by various House and Senate Committees) by Congress in the form of thirteen Authorization and Appropriation Bills in July-August 2006, to enable Federal Agencies to know their forthcoming budgets and implement approved and funded EA and IT Programs October 1, 2006 through September 30, 2007.

As previously described, specific EA and IT Program funding requests are submitted from each Agency in September to OMB to be considered for inclusion in the Federal FY Budget that actually begins to be executed a year later. The format for submitting these requests is contained in an "Exhibit 300 Funding Request" document which is provided in updated OMB Circular A-11 guidance that is sent to all of the Federal Agencies each June-July (see Figure B-1). The Exhibit 300 format requires agencies to submit a business case and technical information on each IT Program to show how that program efficiently and effectively helps the Agency to accomplish its mission. Part of this information is derived from the five FEA Reference Models, which are shown in **Figure 6**. [9]
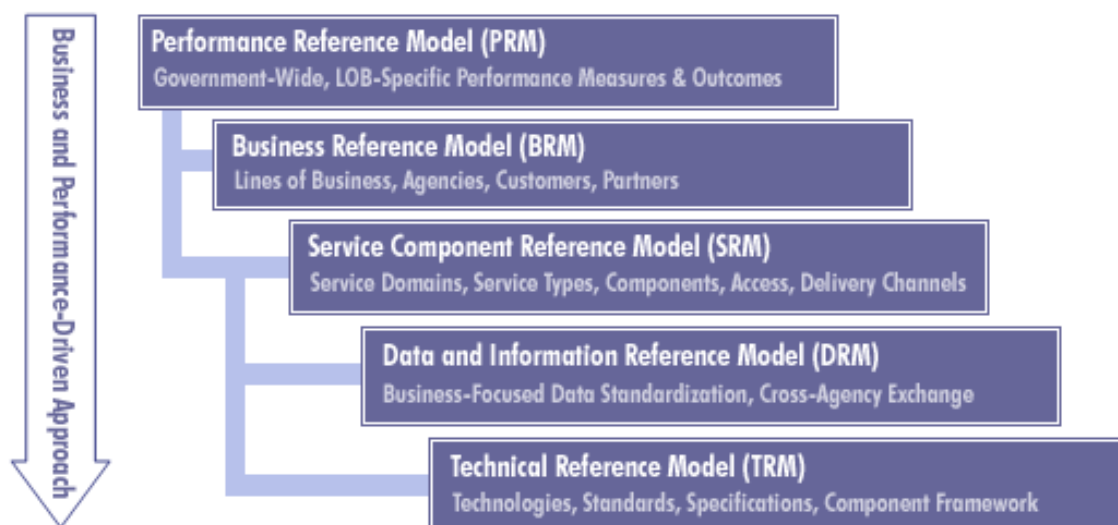

Figure 6. The FEA RMs

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[9] Ibid

Each of the RMs of the FEA is intended to provide Federal Agencies with a standardized way to develop the EA artifacts and data that help Agencies to categorize, and report on their major and/or mission critical IT Programs. This FEA RM information is submitted as part of the Exhibit 300 Budget Request that is submitted to OMB each September (which requires linkage between the EA and capital planning processes in each Agency). The FEA RMs are in some ways an "EA data mining tool" that examines other EA artifacts to extend or categorize those artifacts and the EA resources/systems/components/programs that they document. Examples of other EA artifacts that the FEA RMs are designed to examine and enhance are: business process models, system or process performance measures, data models, web service models, project tracking information, system documentation, application standards information, and network infrastructure standards and documentation.

FEA Performance Reference Model (PRM)
The PRM provides Federal Agencies with a standardized way to develop and use outcome and output performance measures. This helps agencies link strategic goals to the performance of specific IT programs. **Figure 7** from OMB's FEA website (www.feapmo.gov) shows the PRM model and its three distinct measurement areas; inputs, outputs, and outcomes.
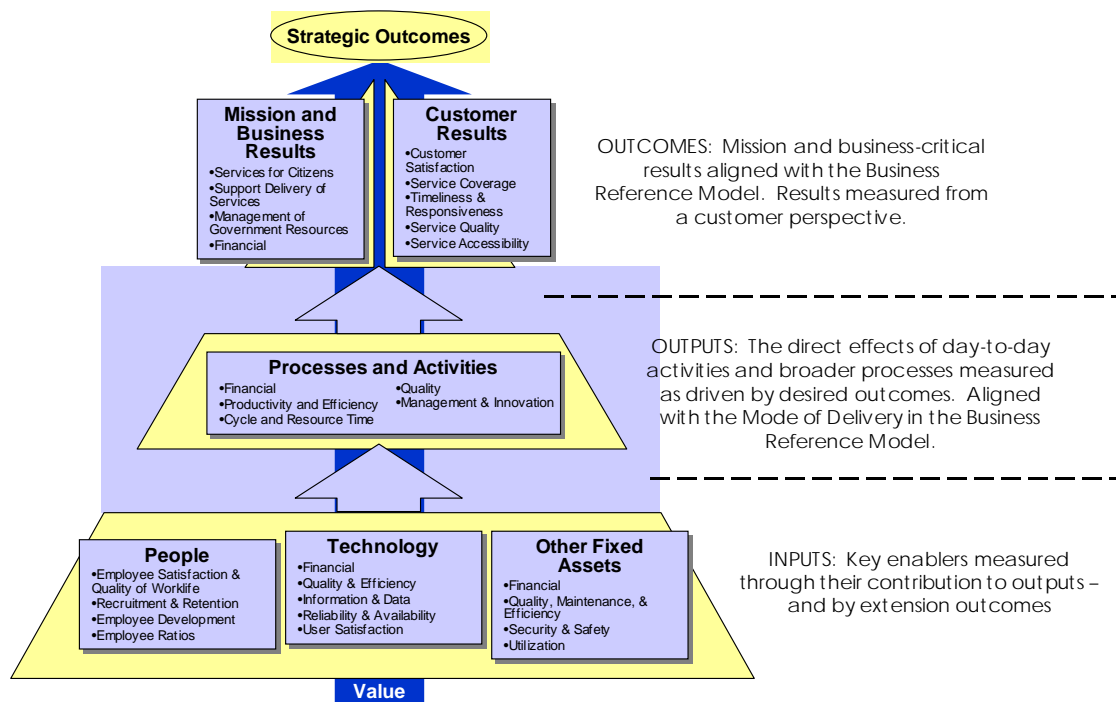

Figure 7. The FEA PRM

One of the main tenants of the PRM is to promote the identification and linkage of process inputs to outputs, and then to desired agency outcomes. The PRM is meant to be completed before the other FEA Reference Models so that the agency has a clear idea of the purpose of their strategic

initiatives and where there are gaps in agency performance that IT programs can help overcome. The following is the reporting table for PRM information that is currently used for Exhibit 300 submission on each major and/or mission critical IT program that an Agency has. *There is no change to this format for the DOD EA PRM.*

Exhibit 300 - PRM Reporting Table						
Fiscal Year	**Measurement Area***	**Measurement Category****	**Measurement Indicator**	**Baseline**	**Planned Improvements to the Baseline**	**Actual Results**
2007	Mission & Business Results	International Affairs & Commerce	# of exporters entering new market	5,853 exporters	2% increase	283 new (4.8%)
2007	Customer Results	Customer Benefit	# of trade leads from e-Trade.gov website	1,358 leads	10% increase	185 leads (13.6%)
2007	Processes and Activities	Management and Innovation	# of businesses registered on e-Trad.gov website	10,465 businesses	6% increase	593 new businesses (5.7%)
2007	Technology	Efficiency	Time to respond to website queries	10.5 seconds	20% decrease	3.1 sec. (29.5%)

FEA Business Reference Model (BRM)
Version 2.0 of the FEA's BRM helps Federal Agencies to categorize their government business activities (internal and external processes) at three levels: Business Area; Line of Business/Internal Functions; and Sub-Functions. In version 2.0 of the BRM, there were 4 general government Business Areas (Services for Citizens, Mode of Delivery, Support Delivery of Services, and Management of Government Resources); 39 Business/Internal Functions; and 153 Sub-Functions. The BRM also helps OMB to determine which Federal Agencies are involved in similar activities. This promotes participation in related e-Government Initiatives, as well as multi-agency collaboration on infrastructure support requirements and the development of solutions to other mission-specific requirements.

The main change to the DOD EA version of the BRM is that additional subfunctions are added for DOD-specific activities, and a mapping to the four DOD mission areas is provided for each of the main BRM domains. **Figure 8** from the FEA Program Management Office (www.feapmo.gov) website shows version 2.0 of the BRM, and the *Defense and National Security* line of business within the "Services for Citizens" domain that DoD primarily (but not exclusively) maps its activities to. Also shown is an example of how the four DoD mission areas would map to business subfunctions within the "Management of Government Resources" domain and each of the five subfunction areas.
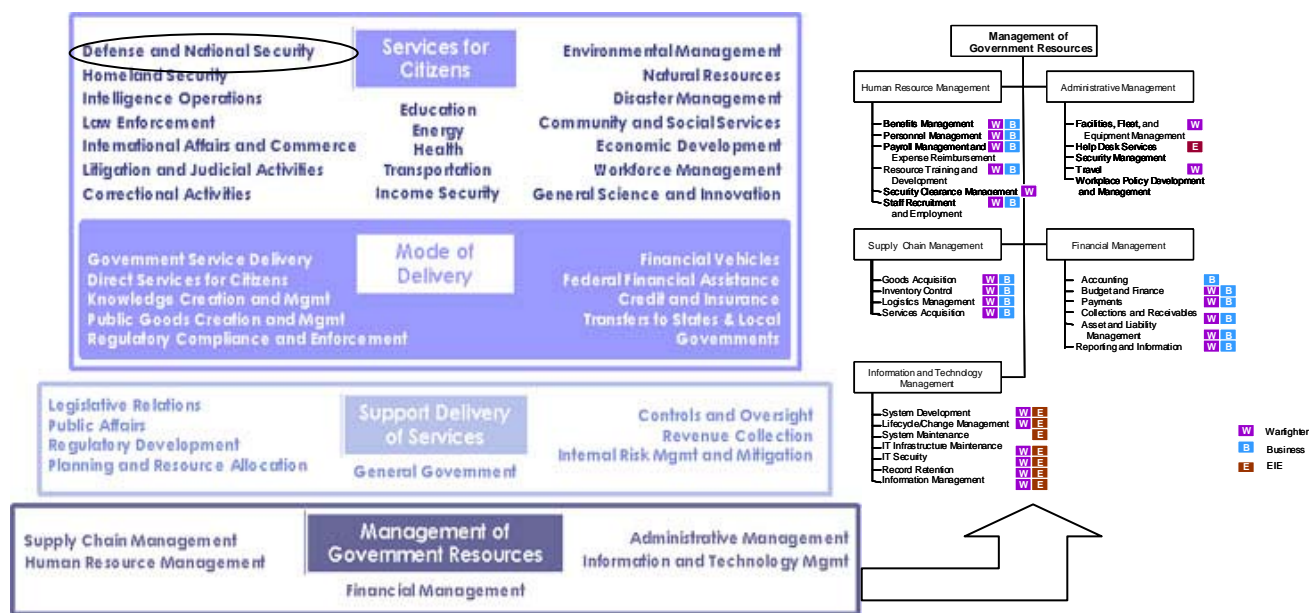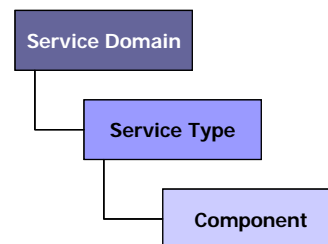
Figure 8. The FEA BRM and DOD Mission Area Mappings

The reporting of BRM information is also done annually through an Exhibit 300 submission for each of the Agency's major and/or mission critical IT programs. The following is the current format of the Exhibit 300 BRM reporting table, with hypothetical data for an Air Traffic Control Program. Information on how to select BRM categories is provided in annual OMB Circular A-11 guidance.

Business Area	Line of Business	Sub-Function
Services for Citizens	Transportation	Air Transportation
Mode of Delivery	Knowledge Creation and Management	Knowledge Dissemination

FEA Service Component Reference Model (SRM)

The SRM is a business and performance-driven EA categorization model that assists Federal Agencies in identifying and classifying "Service Components," which support the achievement of business and/or performance objectives. According to the FEA Program Management Office, "the SRM is structured across horizontal and vertical service domains that, independent of the business functions, can provide a leverage-able foundation to support the reuse of applications, application capabilities, components, and business services."

The SRM has three levels of classification: Service Domain, Service Type, and Component. The identification of classification areas is primarily accomplished by the Agency answering "what functionality does the program/system provide?" and then, "what logical module or area of the program/system supports that functionality?"

The main change to the DOD EA version of the SRM is that additional subfunctions are added for DOD-specific activities, and a mapping to the four DOD mission areas is provided for

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each of the seven main SRM service areas. **Figure 9** shows version 1.0 of the SRM and an example mapping in the Digital Asset Services area to the four DOD mission areas.
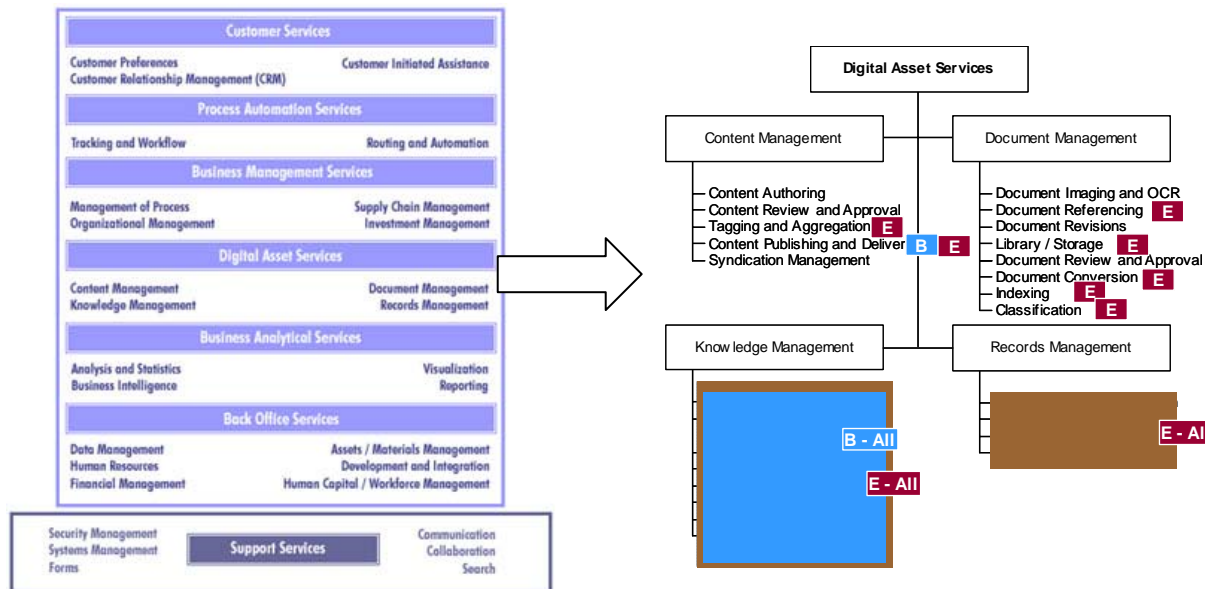

Figure 9. FEA SRM and Mappings to DOD Mission Areas

Along with all FEA information, the reporting of SRM data is done annually through an Exhibit 300 submission for each of the Agency's major and/or mission critical IT programs. The following is the current format of the Exhibit 300 SRM reporting table, with hypothetical data for a Labor Statistics Program. Information on how to select SRM categories is provided in annual OMB Circular A-11 guidance. At the Component level, Agencies can add new descriptions that are not in the guidance.

Service Domain	Service Type	Component
Customer Services	Customer Initiated Assistance	Labor Statistics Archive
Business Analytical Services	Analysis and Statistics	Labor Statistics Publication

FEA Data Reference Model (DRM)
The DRM version 1.0 provides a standardized method for categorizing and describing the data and information that support government line of business operations. The DRM also helps Federal Agencies to develop standard data formats that will increase the sharing of information across the entire Federal Government. **Figure 10** from the FEAPMO website shows the DRM.
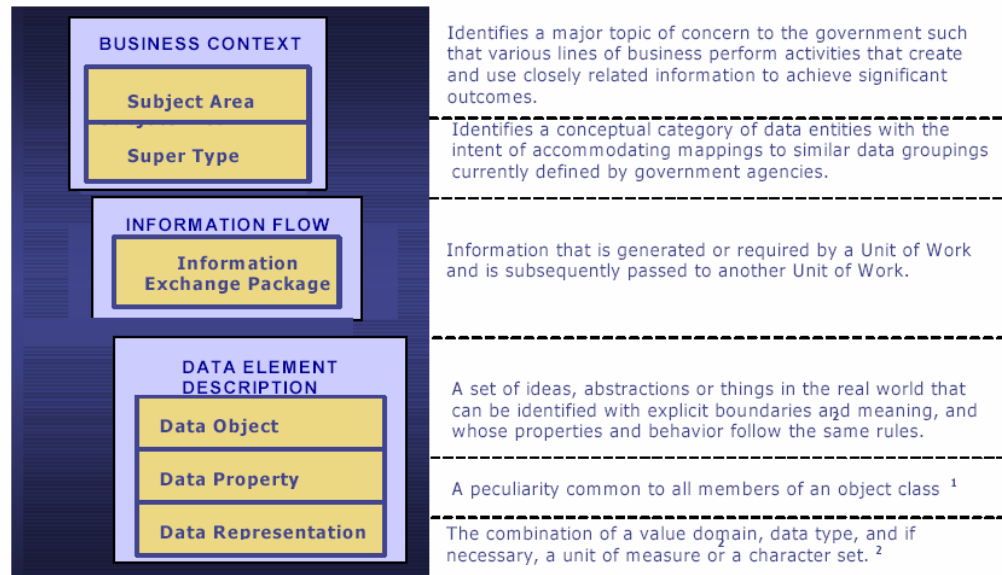
Figure 10. The FEA DRM

The DoD EA DRM will be rolled out in stages to allow for incremental implementation and to evolve the model. The definition and classification of data according to the different layers of the FEA DRM will drive the utility and phased approach to building and using the DoD EA DRM within DoD mission areas and across mission area and various communities within DoD and outside DoD. This approach will be based upon coordinated efforts between and among authoritative sources such in DoD mission areas, various communities inside DoD and outside, other Federal agencies and the FEA-PMO. The DoD EA DRM vision thinks the FEA DRM must change to reflect a more net-centric perspective of o this relationship is shown in **Figure 11**, by Department of Homeland Security. Those authoritative
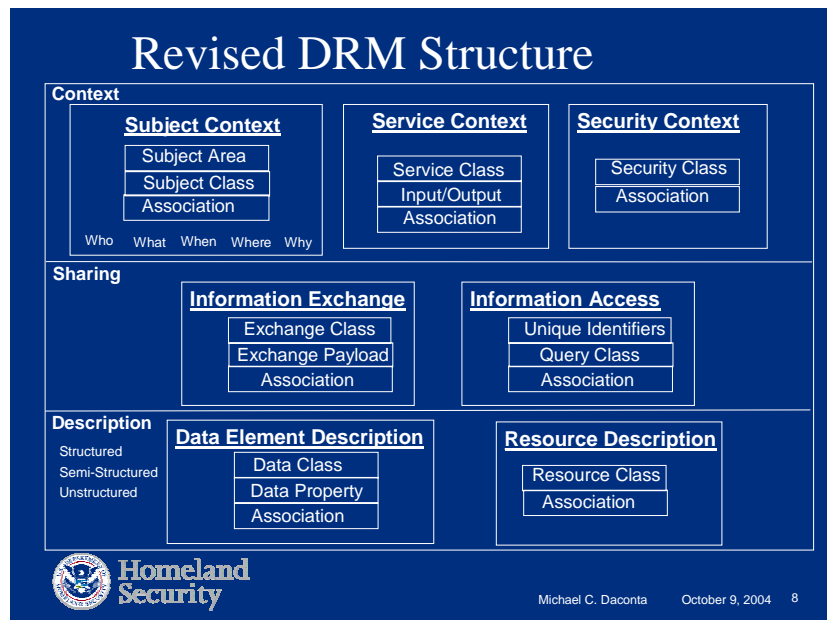

Figure 11. Information Access

sources for data definition and classification will drive the model from both the top and the bottom. The FEA-PMO will drive the FEA DRM from the top down by defining and populating the Subject Area and Super-Type layers of the model. Federal Agencies, organizations, communities of interest and other organizational entities will continue to "build out" the model by defining information.

FEA Technical Reference Model (TRM)

The TRM is a component-driven, classification model that is used to identify the standards, specifications, and technologies that support the development, implementation, and exchange of business and application components (Service Components) that may be used and leveraged in a Component-Based or Service-Orientated Architecture. There are four levels of TRM categorization: Service Area, Category, Standard, and Specification. **Figure 12** from the FEAPMO website shows version 1.0 of the TRM. A set of high-level mappings has been established to enable DoD Program Managers to readily see the relationships between the DoD EA TRM technology categories and those currently used in the DISR. These mappings are shown in one direction using green lines, from the DISR category to the DoD EA TRM category. The box on the end of each mapping line shows the target DoD EA TRM category, and multiple DISR categories may map to that target. Program Managers can use this quick mapping to see relevant TRM categories.
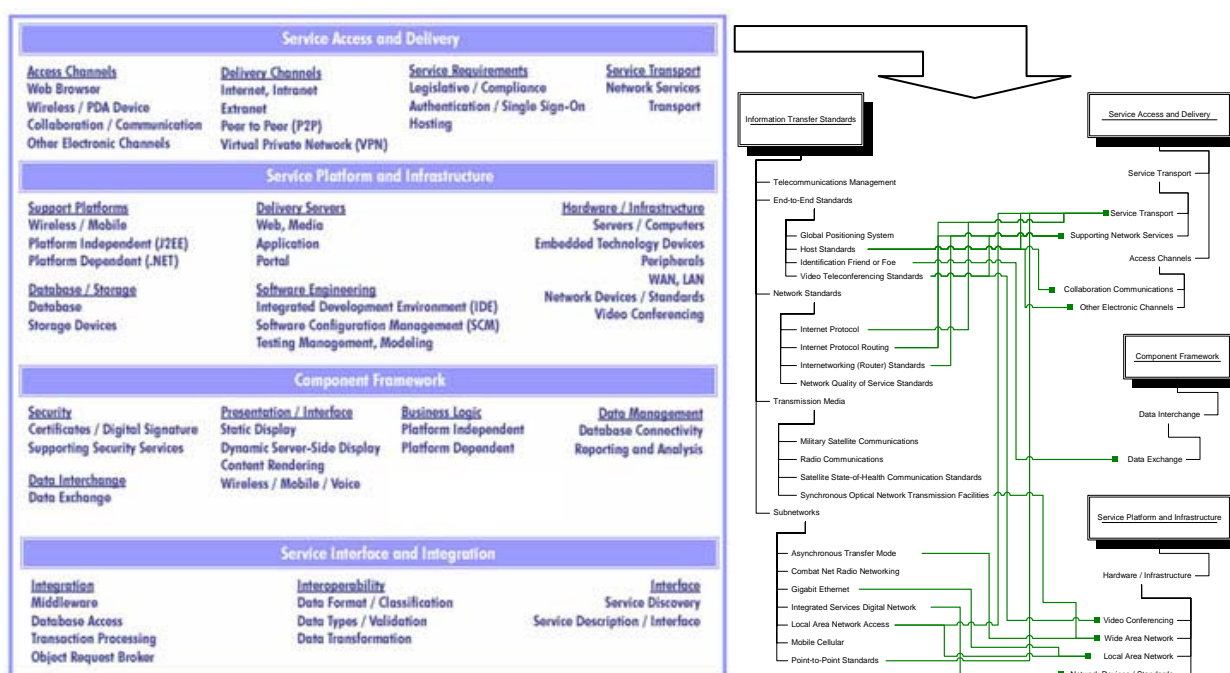

Figure 12. The FEA TRM and DISR Mapping

The reporting of TRM data is also done annually through an Exhibit 300 submission for each of the Agency's major and/or mission critical IT programs. The following is the current format of the Exhibit 300 TRM reporting table, with hypothetical data for a wireless network. Information on how to select TRM categories is provided in annual OMB Circular A-11 guidance. At the Specification level, Agencies can add new descriptions that are not in the TRM guidance.

Service Area	Service Category	Service Standard	Service Specification
Service Access and Delivery	Access Channel	Web Browser	Product A
Service Access and Delivery	Service Transport	Transport	HTTP, WAP

The DoD EA TRM is composed of technology components that encompass an entire infrastructure – internal, external, and the connection in between. These components reside across the network and the application topology. Many technology standards can exist within more than one partition of the physical networks that make up an enterprise infrastructure. Additionally, in the coming months and via separate documents, the FEA-PMO will look to provide some guidance on selection of various components and building secure infrastructures.

FEA Security Profile [10]
In December 2003, OMB and the Federal Chief Information Officer Council (CIO Council) Architecture and Information Committee released *The FEA Security Profile Version 1.0 Phase 1* to federal government agencies for evaluation and comment. The FEA-SP is described as an "overlay" for the set of FEA-RMs and will serve as a tool for federal agency managers and architects to use in designing and deploying legally-compliant, operationally-effective security measures to protect agency information resources. The FEA-SP is also intended to provide a repeatable methodology for identifying options and making risk-based decisions regarding security solutions. "Options Analysis" is a central part of the proposed FEA-SP methodology whereby three categories of security controls (management, operational, and technical) are balanced in making these risk-based security decisions. **Figure 13** shows the FEA Security Profile as it relates to the FEA RMs.

FEAPMO, in *The FEA Security Profile Version 1.0 Phase 1,* describes the CIO Council's objectives for the FEA-SP as "…providing stakeholders with an understandable, consistent, repeatable, scalable, and measurable process for identifying security and privacy controls. This process will support stakeholders in identifying and implementing the level of protection necessary to mitigate or manage threats, risks, exposures, and vulnerabilities." To achieve this vision, FEAPMO and the CIO Council established the following four objectives:

1. Ensure the same management rigor that is applied to each FEA RM is equally applied to security and privacy.
2. Address security and privacy at the beginning of the decision-making process.
3. Facilitate early identification and understanding of essential security factors.
4. Ensure the approach integrates with National Institute of Standards and Technology (NIST) guidance."

According to FEAPMO and the CIO Council, the audience for the FEA-SP includes all federal agency business owners who need to make IT security decisions, as well as CIOs, security practitioners, and cross-agency service providers. **Figure 14** on the next page shows the general relationship between the FEA Reference Models and the FEA Security Profile as it was applied in the Environmental Protection Agency.

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[10] The information in this section is taken from a draft White Paper entitled: The Federal Enterprise Architecture Security Profile Implementation Methodology Case Study Findings and Recommendations A Repeatable Methodology for Implementing the Federal Enterprise Architecture Security Profile Within a Federal Agency's Enterprise Architecture. The White Paper is being prepared by the Syracuse University School of Information Studies, Principal Investigator: Scott Bernard (sabernar@syr.edu) Research Team: Laura Boehm, Ann Reedy, Marvin Reynolds, Joon Park, Mark Pollitt, Jeff Stanton, and Kathie Sowell. Copyright 2005, all rights reserved.

This Case Study Report provides a methodology and recommendations on how federal agencies might implement the FEA-SP, which is in draft at present.   This draft federal policy from FEAPMO provides the government's primary approach to developing IT security solutions within the context of the FEA, as is shown in **Figure 14** on the next page using the EPA as an example agency.
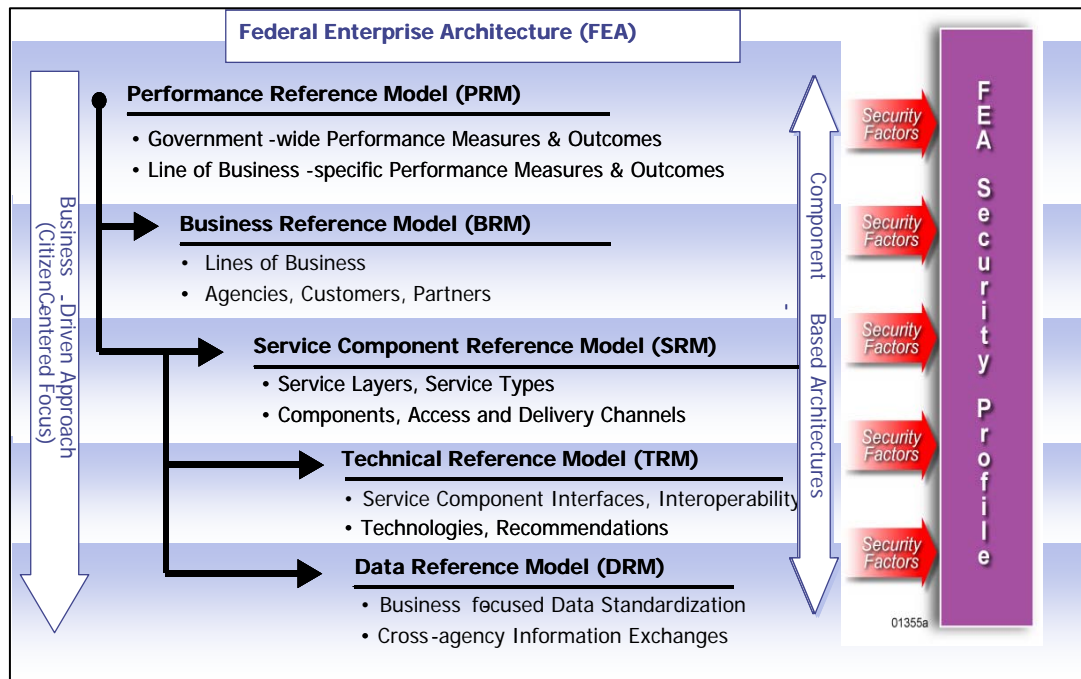

Figure 13. The FEA Security Profile

Stakeholders in the agency's enterprise architecture and security programs/processes work together to complete the following FEAPMO-compliant 10-step *Security Profile Methodology* that addresses two levels of agency activity: (1) Lines of Business, Sub Functions, Services, Processes; and (2) Programs and Systems:

> Requirements Level: Lines of Business / Sub Functions / Services / Processes:

1. Initiate the Agency Enterprise Architecture.
2. Identify Line of Business Services/Processes.
3. Relate Business and Security Objectives.
4. Develop Security Context and Condition Data.
5. Validate Context/Condition Data / Add Security Outcome Metrics.

> Solutions Level: Programs / Systems:

6. Identify System Security Categorization.
7. Select Initial Security Controls.

8. Perform Tradeoff Analysis.
9. Implement Security Controls.
10. Monitor LOB and System Level Security Effectiveness.

Using this example, the DoD will apply the FEA Security and Privacy profile in DoD to test and profile and document the alignment of the DoD EA with the profile.
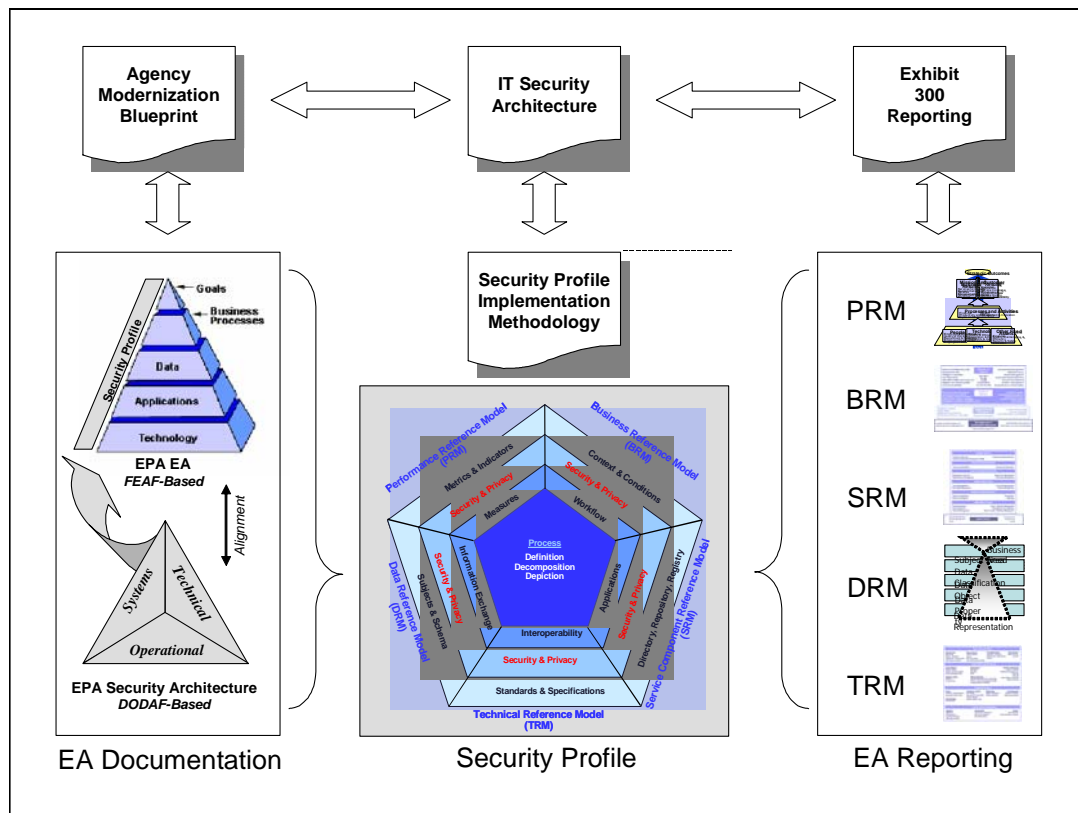

Figure 14. Relating the FEA Security Profile to an Enterprise Architecture

THE DOD EA CONGRUENCE COMMUNITY OF PRACTICE (DOD EAC COP)

The DoD EAC CoP was established to provide the definition and development of the DoD EA RM, and to ensure its congruency with the FEA RM. DoD EAC CoP executes tasks according to the Work Plan, which it develops, and manages and coordinates activities surrounding:

- Definition of the DoD EA RM through a set of DoD-wide RMs focusing on business, performance, service components and capabilities, technologies and standards, and data and information.
- Development of a core set of standardized Component-based Architecture models to facilitate technology solutions and the development of a complete architecture (baseline, target, and transition) to align with the FEA and to support the PMA.

- Assessment and identification, through high-level architecture, critical success factors, and Line of Business performance information, of new opportunities for business process and system consolidation to improve DoD and government efficiency and effectiveness.
- Participation in the development of a Web-based FEA repository, called the Federal Enterprise Architecture Management System (FEAMS), to provide agencies with a view of cross-agency information and the alignment of IT investments to areas of the FEA.

DoD EAC CoP is composed of representatives from various DoD Components. The Support Team is responsible for delivering work products, for example, the DoD EA RMs, to align with the FEA RMs. DoD EAC CoP also coordinates with various stakeholders incorporating comments, as appropriate, to produce a final product. The DoD EAC CoP has created, and maintains, the following Website to help ensure that DoD EA information is shared: *http://www.dod.mil/nii/*. Also the CoP maintains a portal that is used to share information about advancing the state of practice of enterprise architecture: *https://itis.esportals.net/index.cfm*. One may join the portal by requesting a user ID and password at the NII sight: *http://www.dod.mil/nii/* as it is being developed. The DoD's A&I Directorate provides leadership for the DoD EA RMs. The A&I Directorate is responsible for ensuring the overall success of the DoD EA RMs, overseeing the completion of project tasks, and securing the approval of project deliverables by senior DoD officials and the projects' stakeholders, e.g., Business Modernization Management Program (BMMP), The Joint Staff, DoD Components, and senior DoD IT, planning, budget, and procurement staff.

ARCHITECTURE AND INFRASTRUCTURE COMMITTEE (AIC) – GOVERNANCE AND COMPONENTS SUBCOMMITTEE

The Federal CIO Council, Architecture and Infrastructure Committee (AIC), Governance (GC), Components (C) and Emerging Technology (ET) subcommittees were established to foster the identification, maturation, use, and reuse of Component-based Architectures and Architectural Components in the Federal Government. DoD serves as the AIC Chair and the Governance Subcommittee Co-chair, sharing this responsibility with the Chief Architect of the Federal Government. DoD also has representation on both the Component and Emerging Technology subcommittees. The underlying objectives of the AIC and its subcommittees are to foster the basic principles of interoperability, reusability and portability of processes, services and infrastructure components by Federal Agencies and related partners and stakeholders as they modernize their business processes through data sharing, e-government automation, and improved information systems.

The efforts of the subcommittees will be directed toward achieving these outcomes:

- Identification of business processes, service components, and technologies for re-use through analysis of the FEA Service Component and TRMs
- Reduction of IT costs for Federal Agencies achieved through the re-use of business processes, service components, and technologies.
- Rapid solution development through the re-use of components
- Rapid integration of disparate business services
- Development and implementation of e-Gov solutions based on component-based architectures

THE COMMUNICATIONS CAMPAIGN

As can be seen from the preceding discussion, the FEA and the DoD EA sets of RMs represents a fundamentally different way of looking at enterprise architectures in an enterprise. The idea that a complex architecture can be presented in a simplified manner is demonstrated by the use of the RMs during the capital planning process, as Cabinet-agencies prepare their IT 300 Exhibits, or business cases, according to OMB Circular A-11 guidance each year.

The campaign contains elements necessary to achieve buy-in from DoD executives and give exposure to the larger community of enterprise architects who want to contribute to the advancing the state of practice of enterprise architecture work through the use of RMs for improving IT capital planning and resource allocation.   The campaign articulates the interdependencies between and among the producers and consumers of enterprise information. It includes a Strategy to show that complex enterprise architecture information can be shown in a simplified context in a set of DoD EA RMs and to bring understanding to those complex interdependencies through the context of the DoD EA. The campaign also discusses the use of DoD EA RMs by the Department (e.g., portfolio management) to support DoD executive decision processes and the government decision processes at large. The campaign package will clearly articulate the value that the DoD EA RMs brings to the department and the government. This campaign package uses various media to get the points across such as professional multimedia presentations, white papers, briefings and discussion forums, articles in the trade press, executive round tables, panels at conferences, key note speakers at conferences, and articles published in professional journals.

APPENDIX A

DoD EA RM Communications Campaign Plan – Objectives

Task	Objective	Description	Outcome(s)
1	Develop the DoD EA RM Communications Campaign Package	The campaign package contains elements necessary to achieve buy-in from DoD executives. It articulates the interdependencies between and among the producers and consumers of enterprise information. It includes a plan to show how enterprise architecture information and the context that the DoD Enterprise Architecture Reference Model (RMs) bring to understanding those complex interdependencies. The package also discusses the use of DoD EA RMs by the Department (e.g., portfolio management) to support DoD executive decision processes and the government decision processes at large. The campaign package will clearly articulate the value that the DoD EA RMs brings to the department and the government. This campaign package uses various media to get the points across such as professional multimedia presentations, white papers, briefings and discussion forums, articles in the trade press, executive round tables, panels at conferences, key note speakers at conferences, and articles published in professional journals.	Develop communications elements necessary for achieving Executive-level buy-in.

Understanding by senior department stakeholders of how DoD EA RMs can underpin the business decisions of the Department and the entire government. |
2	DoD/FEA RM Alignment, Versions .04, .05, & .06	Continued improvements to the DoD EA RM and their alignment with the FEA RMs. Continued analysis of the need to align DoD EA SRM components to DoD EA BRM sub-functions and recommendations to improve alignments to include the FEA SRM/BRM alignment if the analysis warrants. Continued analysis of the need to improve the DoD EA TRM alignment with the DoD EA SRM components and if analysis warrants, recommend improvements to the alignments if the analysis warrants. FEA SRM/TRM alignment. Continued improvement to the DoD EA PRM alignment with the Strategic Goals, performance plans and reports of the Department and recommendations to improve FEA PRM strategic goals, performance plans and reports for the government. Continued improvement of the DoD EA DRM and alignment of Business Context of data with the DoD Community of Interests and recommendations to improve the FEA DRM based on DoD EA DRM developments.	Better understanding of associations between and among the different RMs and their alignment and recommendations for improvement.
3	Visualizations of DoD/FEA RM Alignment	A visual presentation of the relationships and interdependencies among DoD EA RMs and between the DoD EA RMs and the FEA RMs.	Understanding of the DoD / FEA RM alignment through visualization.
4	Business Value of DoD EA RMs to the Enterprise	Develop and test the proposition that EA RMs may be used to give context to complex enterprise architecture data such that it informs the resource allocation aspect of the Capital Planning and Investment Control decision making process.	Enterprise resource allocation decisions influenced by EA & RM information.
5	ITMA Process Guidance and Software Recommendations	Examine the ITMA process and develop guidance and software recommendations that would improve the architecture aspects of the Exhibit 300 preparation.

Recommend improvements to ITMA process, guidance and software to facilitate more informed decisions using architecture information as the foundation and develop DoDD regarding the use of DoD EA RMs to inform the decision process of the Department.

Prototype guidance to use ITMA for broader decision making regarding resource allocation decisions based on recommendations resulting from analysis based on DoD EA RM information. | Higher score on architecture portion of OMB Exhibit 300 submissions for DoD Programs.

System changes to affect this higher score. |
| 6 | DoD EA RM | Based on Service and Agency experience during past CPIC | Improved resource allocation |

	Governance Recommendations	cycle ,recommend guidance and changes to the policy and process for informing the CPIC process during the next cycle to facilitate use of the DoD EA RMs as a management tool to realize reduced IT cost, improved IT process, improved alignments of IT with the mission, improved measurement of IT contribution to the mission. Recommend governance policy and process for using DoD EA RM to bring about DoD Enterprise transformation.	in the department based on the rigor of architecture methods to inform, behind the scenes, management decision processes.